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ATTORNE DOCKET NO. CONFIRMATION NO. FILING DATE FIRST NAMED INVENTOR APPLICATION NO.

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Tetsuya Nishi

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STAAS & HALSEY LLP 700 11TH STREET, NW SUITE 500 WASHINGTON, DC 20001

EXAMINER WANG, GEORGE Y

ART UNIT 2882

DATE MAILED: 12/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Application No. Application No. Application No. Og/985,374 NSHIET AL.						
Examiner George Y. Wang - The MAILING DATE of this communication appears on the cover sheet with the correspondence address - Period for Reply A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE of THIS COMMUNICATION. Estatesans of tens may be available under the previsione of 37 CFR 1.38(p). In one event, however, may a reply be limely filled If the period fromly apported store less ten fromly (0.05 sep. a reply whith the statebory principlent of things) (0.05 sep. a reply whith the statebory principlent of things) (0.05 sep. a reply and will expire SIX (0.140NT15 from the mailing date of this communication. If the period fromly apported store is less than first, (0.05 sep. a reply whith the statebory principlent of things) (0.05 sep. a reply whith the statebory principlent of things) (0.05 sep. a reply whith the statebory principlent of things) (0.05 sep. a reply and will expire SIX (0.140NT15 from the mailing date of this communication. If the period fromly appoints were already to the communication of this principlent of the supplication is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213. Disposition of Claims 4) ○ Claim(s) 1-7 is/are pending in the application. 4a) Of the above claim(s) is/are allowed. 6) ○ Claim(s) is/are allowed. 6) ○ Claim(s) is/are allowed. 6) ○ Claim(s) is/are rejected. 7) □ Claim(s) is/are rejected. 7) □ Claim(s) is/are rejected. 11) □ The proposed drawing orrection filled on is a reply to this Office action. 12) □ The oth or declaration is objected to by the Examiner. 13) □ The proposed drawing correction filled on is a supplication is objected to by the Examiner. 14 proposed drawing orrection filled on is a supplication is objected to by the Examiner. 15 proposed drawing correction filled on is a supplication is objected to by the Examiner. 16 proposed drawing correction filled on is a supplication		Application No.		Applicant(s)		
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DETAILED ACTION

Claim Rejections - 35 USC § 103

- 1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

- 2. Claims 1-2 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admission of Prior Art (AAPA) in view of Kashima (U.S. Patent No. 6,317,529).
- 3. Regarding claims 1 and 2, AAPA discloses an optical switch and optical switching method for increasing the number of inputs and outputs of an optical switch

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with four optical matrix switches where a plurality of 2-input/2-output optical switch elements are arranged in each matrix to form a plurality of inputs, outputs, and auxiliary input and output ports (fig. 13b).

However, AAPA fails to specifically disclose the connection of the auxiliary output ports of the first optical matrix switch to the input ports of the third optical matrix switch, the connection of the output ports of the second optical matrix switch to the auxiliary input ports of the third optical matrix switch, the connection of the output ports of the first optical matrix switch to the auxiliary input ports of the fourth optical matrix switch, and the connection of the auxiliary output ports of the second optical matrix switch to the input ports of the fourth optical matrix switch.

Kashima discloses an optical cross-connect apparatus where switches are crossed for the expansion of input and output (fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have configured the connection of the auxiliary output ports of the first optical matrix switch to the input ports of the third optical matrix switch, the connection of the output ports of the second optical matrix switch to the auxiliary input ports of the third optical matrix switch, the connection of the output ports of the first optical matrix switch to the auxiliary input ports of the fourth optical matrix switch, and the connection of the auxiliary output ports of the second optical matrix switch to the input ports of the fourth optical matrix switch to the input ports of the fourth optical matrix switch since one would be motivated to reduce signal loss (col. 1, lines 66-67). Furthermore, one skilled in the art fully acknowledge that the essence of cross connecting switches increases the maximum number of

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possible combinations of switching elements, ultimately shortening the switching response time (col. 1, lines 24-26) as the combination of inputs and outputs is expanded.

- 4. <u>As per claim 5</u>, AAPA discloses the optical switch as recited above with switches in an opto-micro-electromechanical system (fig. 13a, ref. 1002).
- 5. As per claim 6, AAPA discloses the optical switch as recited above. However, AAPA fails to specifically disclose optical switches that are PI-LOSS optical matrix switches.

Kashima discloses an optical cross-connect apparatus with optical switches that are PI-LOSS optical matrix switches (col. 1, lines 32-38).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used PI-LOSS optical matrix switches since one would be motivated by its smaller size and basic switching function. Typically, one of ordinary skill in the art would use small-scale unit switches connected in series and stages for large-scale optical switches (col. 1, lines 32-38).

6. As to claim 7, AAPA discloses the optical switch as recited above. However,
AAPA fails to specifically disclose the connection of the auxiliary output ports of the first
optical matrix switch to the input ports of the third optical matrix switch, the connection
of the output ports of the second optical matrix switch to the auxiliary input ports of the

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third optical matrix switch, the connection of the output ports of the first optical matrix switch to the auxiliary input ports of the fourth optical matrix switch, and the connection of the auxiliary output ports of the second optical matrix switch to the input ports of the fourth optical matrix switch. Furthermore, AAPA fails to specifically teach a plurality of demultiplexing means for the input and a plurality of multiplexing means for the output.

Kashima discloses an optical cross-connect apparatus where switches are crossed for the expansion of input and output (fig. 1) and a plurality of demultiplexing means for the input and a plurality of multiplexing means for the output (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have configured the connection of the auxiliary output ports of the first optical matrix switch to the input ports of the third optical matrix switch, the connection of the output ports of the second optical matrix switch to the auxiliary input ports of the third optical matrix switch, the connection of the output ports of the first optical matrix switch to the auxiliary input ports of the fourth optical matrix switch, and the connection of the auxiliary output ports of the second optical matrix switch to the input ports of the fourth optical matrix switch since one would be motivated to reduce signal loss (col. 1, lines 66-67). Furthermore, one skilled in the art fully acknowledge that the essence of cross connecting switches increases the maximum number of possible combinations of switching elements, ultimately shortening the switching response time (col. 1, lines 24-26) as the combination of inputs and outputs is expanded.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a plurality of demultiplexing means for the input and a plurality of multiplexing means for the output since one would be motivated because the use of the switch is essential to its overall function in WDM systems for maximized capacity and speed for data transmission (col. 1, lines 10-14).

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Kashima in further view of Shimomura et al. (U.S. Patent No. 6,347,168, from hereinafter "Shimomura").

AAPA and Kashima disclose the optical switch as recited above. However, the references fail to specifically disclose optical switches that are cross-bar optical matrix switches and switching elements that are semiconductor optical switches.

Shimomura discloses an optical switch system with optical switches that are cross-bar optical matrix switches having switching elements that are semiconductor optical switches (col.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used cross-bar optical matrix switches with switching elements that are semiconductor optical switches since one would be motivated by its smaller size, flexibility of use, and basic switching function (col. 1, lines 13-36). Its basic function of converting signals within a node minimizes communication costs (col. 1, lines 13-24).

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Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 703-305-7242. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gw December 5, 3

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